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# **6 DEVELOPMENT IMPACT PROJECTION MODEL**

## **A. INTRODUCTION**

Chapter 6 describes the methods used by RKG Associates, Inc. to project the fiscal impacts associated with various long-term development alternatives for the Town of Blacksburg over the next 20 years. It is the Town's intention to use the results of this study to help shape future development patterns in Blacksburg that do not tax the community's ability to provide high quality municipal services to residents and businesses.

It is important to note that the Development Impact Projection Model described in this chapter is not designed to analyze the impacts associated with specific site development proposals. The model employs an average costing technique, which applies existing property values and site density levels of the different land uses at the neighborhood district level to project future land demand and assessed value impacts in these same districts. While this is a suitable approach for long-range planning purposes, it may not accurately represent individual site development proposals and should not be used for this purpose.

## **B. STUDY PURPOSE AND APPROACH**

The Development Impact Projection Model is comprised of several integrated programs. The main program, known as the "Scenario Builder Development Model,"

is a program created to analyze the fiscal impacts associated with specific long-range development scenarios inputted by the program's user over a specific period of time. The model accounts for the location of the new development as well as the type of development being added. As described in Chapter 5, the consultants have segmented the Town into seven independent neighborhood districts. These districts reflect historical neighborhood planning areas recognized in the Town's Comprehensive Plan and its neighborhood planning efforts. For purposes of projecting future growth impacts, the University District containing the Virginia Tech campus has been eliminated from the analysis. This land area, although comprising a significant portion of the Town's land base, is primarily owned by Virginia Tech (Commonwealth of Virginia) and the Virginia Tech Foundation. The development activity that does occur in this district will largely occur beyond the purview of the Town and will not be taxable under most circumstances.

The model contains data for seven main land use categories in the six remaining neighborhood districts (see Table 6-1). Each land use category is an amalgamation of several different land use categories, which have been collapsed by the consultants in order to simplify the model building and data updating process. Each land use category has a different set of revenue and service demand attributes that make it unique. For example, residential land uses typically generate demand for public safety, public works, recreation, general administration, and various other services provided by local government. In contrast, uses such as industrial and warehouses place very different and often considerably lower demands on municipal services.

**Table 6-1****Components of Major Land Use Categories****Town of Blacksburg**

Major Land Use Categories	Component Land Uses
<b>Residential Land Uses</b>	
<input type="checkbox"/> Single-Family (Low Density)	Single-Family (Low Density)
<input type="checkbox"/> Single-Family (Rural)	Single-Family (Rural)
<input type="checkbox"/> Multi-Family	Duplex Condominiums Townhouses Mobile Homes Multi-Family (Apartments)      Complex

Employment Generating Land Uses		
<input type="checkbox"/> Retail/Service	Mixed-Use Commercial Mixed-Use Commercial Commercial	Residential
<input type="checkbox"/> Office	Professional Offices Medical Services	
<input type="checkbox"/> Industrial	Research & Development Industrial	
<input type="checkbox"/> Other Land Uses	Agriculture Vacant (Undeveloped) Civic University (Outside District) Parks & Trails Right-of-Ways Parking Lots Unknown Properties	Univ.

Source: Town of Blacksburg Department of Planning and Engineering and RKG Associates, Inc., 2000.

It is important to note that the Development Impact Projection Model does not anticipate the demand for services that are provided on a user fee basis. Such services as municipal water and sewer treatment, municipal golf and other recreation, and public transit are provided on a fee basis to the users of those services. From a budgetary standpoint, these services are classified as enterprise fund accounts and are not funded under the Town's general fund budget. For purposes of this study, only municipal services funded through general fund appropriations are projected. It is assumed that the future cost of providing enterprise fund services will be covered by increased user fees or other outside subsidies and not general fund appropriations.

### C. MODEL INPUTS

The Development Impact Projection Model requires a limited number of input assumptions in order to produce an impact projection. Assumptions related to real estate appreciation, cost inflation, residential vacancy and real property tax rates are entered by the user, providing customized "control" over each scenario's basic

assumptions. This allows the user to anticipate relative changes in the local economy that are not directly associated with new residential and non-residential growth. Introducing these assumptions into the model allows the user to make certain assumptions about the economic context in which future growth will occur. For example, if the user anticipates a period of strong real estate appreciation and somewhat lower inflationary cost effects on municipal services, the model will account for these underlying forces. Conversely, assumptions reflecting rapid cost inflation and stagnant real estate appreciation could be used to mirror the effects of an economic recession. The following section describes the major input assumptions contained in the model.

- ❑ Inflation Rate - The inflation rate relates to the changing costs for providing municipal services. In general, municipal service levels are tied to the demand generated by local households, business establishments, institutional and government uses, and visitors to the community. The cost of providing these services will change periodically due to two primary reasons: (1) the size or number of users demanding services will increase, or (2) the basic cost of providing the services will increase due to general inflation (i.e., increased cost of labor, materials, equipment, etc.). It is these two components that are contained in the model's inflation rate. The inflation rate has been held constant at 2.5% for all three development scenarios.
  
- ❑ Appreciation Rate - The appreciation rate refers to the change in market value of the Town's real property tax base. The value of real property (land and buildings) changes over time based on current supply and demand factors. For example, the scarcity of land resources for new development can steadily increase the value of all existing undeveloped properties in a community. This occurs as individuals become more willing to pay higher prices in order to acquire a portion of the limited supply. The opposite can also occur when property owners feel pressure to discount the value of their land in order to sell it. Price depreciation often occurs during periods of recession when the demand for land is greatly reduced. The appreciation rate assumptions are adjusted for each scenario, with 2% reflecting high growth, 1.5% reflecting medium growth, and 1% reflecting slower growth.

- ❑ Housing Vacancy Rate – In the Model, housing vacancy rate reflects the status of the Town's housing market. A strong housing market would be typified by a vacancy rate of less than 5 percent. The Model also uses the housing vacancy rate to project the Town's population. The vacancy rate only refers to the occupancy of market rate housing units and not on-campus or dormitory housing at Virginia Tech. The housing vacancy rate assumptions range from 2% for the high growth scenario, to 3% for medium growth, and 4% for the slower growth scenario.
- ❑ Real Property Tax Rate – The real property tax rate is assessed on all non-tax-exempt properties located in the Town of Blacksburg. The revenues generated by this tax are used to fund a broad range of municipal services. Blacksburg property owners pay real property taxes to both Montgomery County and the Town at different rates per \$100 of assessed property value. As the cost of providing services increases or decreases over time, the amount raised through real estate taxes may have to be adjusted through changes in the tax rate. In Blacksburg, the local portion of the tax rate has remained at \$0.20 per \$100/assessed value for over a decade.
- ❑ Interest Rate – The Model allows the user to enter the interest rate on long-term municipal debt instruments used to fund capital improvements. The amount paid on interest on long-term debt can vary greatly depending on the amount borrowed, the interest rate, and the length of the payback period. These factors can be entered into the Model in order to reflect the amount of municipal borrowing required to support new growth.

For each of these inputs, the user is required to provide realistic assumptions based on recent trends or conservative predictions. As with any forecasting tool, long-range projections will have a greater margin for error due to the unpredictable nature of future economic cycles and market conditions. However, with the use of conservative assumptions, one can pose realistic scenarios that accurately portray the cost and revenue relationships that are built into the model.

#### **D. MODEL DRIVERS AND OUTPUTS**

After the inputs are entered, the model runs the calculations that determine the impacts of the development scenario used based on the growth trends and economic variables entered. There are four main modeling aspects to the program. They are population, revenues, expenditures, and debt service. The results of these calculations are used to create the final presentation.

## **1. Model Drivers**

- Service Demand Ratio - The service demand ratio is used to allocate expenditures by land use type. The ratio is calculated based on a weighting system that is applied to the relative share of each land use as a percentage of the Town's total tax base. The Service Demand Ratio is then used to apportion the cost of providing municipal services to different types of development (e.g., single-family (rural), single-family low density, multi-family, retail/service, office, industrial/R&D, and other.
- Dwelling Units and Building Square Footage - The number of dwelling units are used to calculate changes in population. The new dwelling units are adjusted for vacancy and then multiplied against the appropriate average number of persons per household to estimate the additional population. Non-residential building square footage is used to calculate adjustments in revenues and expenditures. Therefore, every additional square foot will impact the revenue generated as well as the service demand, based on land use.
- Municipal Revenues - There are several revenue categories used by this model. The current municipal revenues provide the base data to determine the effects each land use has on the projected revenue calculations. This multiplier is then applied to new growth to generate the projected impacts. The major revenue categories include: property taxes (from both real estate appreciation and new development), restaurants (meals tax), consumer utility tax, business licenses, local sales and use, motor vehicle licenses, miscellaneous tax revenues, non-tax revenues, and intergovernmental revenues.

- ❑ Municipal Expenditures - Similar to revenues, expenditures are categorized into different groups. The values of each category are applied to the service demand ratios to calculate the impacts of new development. Major expenditure categories include: public safety (i.e., police, fire, and EMT), public works, general government administration, parks, recreation, and culture, and other expenditures.
- ❑ Capital Investment - This factor only impacts the debt service model. Any projected capital improvements related to new growth are added to the program and used to calculate the debt service. Planned improvements not related to growth are not factored into the model.

## **2. Model Outputs**

- ❑ Projected Development Demand - This is the total new growth in acreage, assessed value, parcel/unit count and square footage based on the assumptions made by the user. Growth is determined by a series of calculations that account for land use type, location and intensity. These calculations reflect the FAR densities that are imbedded in the model, which reflect existing property data.
- ❑ Projected Land Demand - Each new square foot, unit or parcel developed will consume a certain amount of land. This calculation reveals the potential land consumption based on the development scenario. Each land use and District has a unique land consumption ratio based on the historical density characteristics of each district and land use category.
- ❑ Operating Revenues/Less Expenditures (Before Debt Service) - This is the overall cash flow change due to the new development. A negative number indicates that the proposed new growth will diminish any revenue surplus previously existing. This calculation does not account for any existing surplus or shortcoming in gross cash flow.
- ❑ Projected Debt Service and Financial Ratios - These calculations detail the impacts from capital improvement projects associated with the proposed new growth.

- ❑ Population Estimate - Simply the projected population change and total value due to the residential portion of the new growth scenario

## **E. RESULTS OF SCENARIO BUILDER DEVELOPMENT MODEL**

The Scenario Builder Development Model is a planning tool that allows the Town to project changes in municipal service demand resulting from future development patterns. The Model has the ability to make projections to the Year 2020 and its base data can be updated on an annual basis. For purposes of this study RKG Associates has posed three different development scenarios for the Town of Blacksburg over the next 20 years. The low, medium, and high growth scenarios provide a realistic range of development alternatives for the Town based on a set of growth assumptions.

### **1. Model Growth Assumptions**

The most significant assumption underlying the three growth scenarios deals with the future of Virginia Tech and the potential for increased enrollment levels over the next ten years. Although the University has not publicly announced a plan to increase enrollment at the Blacksburg campus, and nor has Virginia's General Assembly authorized funding for such an expansion, there are a number of internal and external factors and forces that may eventually move the University in that direction. Upon discussing these issues with Virginia Tech's Vice President for Finance and Treasurer, it is the consultant's opinion that the Town should begin prudently planning for increased enrollment at Virginia Tech over the next decade. Exactly how many new students might be located at the Blacksburg campus is difficult to project, as it is likely that some new students may be enrolled at the University's Northern Virginia Campus or may commute. However, for purposes of this study, the consultants have assumed that as many as 5,000 new students might be added over the next ten years. Of this total, it is assumed that roughly 4,800, or 96 percent, of these students will attend the main campus and choose to live in the Town of Blacksburg.



In addition to the increased number of students, the University will likely have to hire additional research professors, instructors, and administrators in order to accommodate its larger student body. A larger staff will also be necessary in order to meet the increased research commitments of the University as it moves towards its goal to become a Top 30 research university by the Year 2010. RKG estimates that increased enrollment and research activities at Virginia Tech could result in the hiring of as many as 550 new faculty and administrators, of which, it is estimated that perhaps 50 percent might choose to live in Blacksburg. As a result of Virginia Tech's direct growth, there could be increased demand for between 1,400 and 3,100 new dwelling units in Blacksburg over the next 20 years, depending how many new students and faculty live in Blacksburg housing rather than university housing (dormitories and fraternal housing) or dwellings located outside the community.

Regarding other model inputs, the consultants have assumed the following:

- a.) Economic & Market Assumptions – The consultant's have held constant the economic and market assumptions for each of the three development scenarios.

Model Assumption	High Growth	Medium Growth	Low Growth
Annual Real Property Appreciation Rate	2.0%	1.5%	1.0%
Real Property Tax Rate Per \$100/Assessed Val. (Local Share)	\$0.20 2.5%	\$0.20 2.5%	\$0.20 2.5%
Annual Inflation Rate	2%	3%	4%
Residential Vacancy Rate	0	2,229	3,448
People Added to Group Quarters (Years 1-10)	6%	6%	6%
Interest Rate on Long-Term Debt	20	20	20
Term of Long-Term Debt			

b.) Scenario Development Assumptions – In accordance with assumptions about Virginia Tech's growth potential over the next ten years, the consultants have posed three alternative development scenarios (low, medium, and high) for the Town of Blacksburg. Since much of Blacksburg's historical population growth has been primarily driven by the growth of the University, the consultants have not assumed any additional household and population growth beyond the direct impacts caused by Virginia Tech. In all likelihood some modest additional growth might occur in Blacksburg as people, unrelated to the university, move into the community for employment and other reasons, however, this number is likely to be quite small in comparison.

The driving factor for the low, medium and high development scenarios is the percentage of new residents that will live in Blacksburg housing, as opposed to University or on-campus housing or housing in other communities. Since the University provides many of its own services such as student housing, recreational and library services, police security, and public works, the impact of one student living on-campus is different than one student living elsewhere in the Town of Blacksburg. Students living off-campus in the community create an immediate demand for housing, which in turn creates an increased demand for police, fire, EMT services, as well as, transportation, public works, and various other municipal services. Therefore, the actual number of new students, faculty, and other employed persons who choose to live in Blacksburg housing will directly impact the demand for municipal services in the future.

Relative to non-residential growth, the consultants have projected the demand for between 117,000 and 122,000 square feet of new building space per year over the next ten years, with the majority of this growth occurring in the industrial/R&D and retail/service sectors. After the first ten years, the level of new construction is projected to drop to around 80,000 SF per year. The rate of non-residential growth has been held constant for each of the three development scenarios (See Table 6-2).

**High Growth Scenario** – The high growth scenario assumes that 100 percent of the new students, faculty, and workers that choose to live in the Town of

Blacksburg over the next 10 years will occupy market rate rental or owner-occupied housing somewhere within the community. This is consistent with the University's current position not to construct any additional on-campus dormitories at the main campus. While it is likely that Virginia Tech would have to provide some additional on-campus housing in order to accommodate 4,800 new students, none is assumed in this instance in order to create a high growth, worst case scenario. Given the current 2% housing vacancy rate and historic tightness of Blacksburg's housing market, it is assumed that virtually all of this demand will have to be accommodated through the construction of new housing units or the redevelopment of existing apartment complexes.<sup>1</sup>

Without any additional on-campus housing, nearly 246 new dwelling units per year will have to be constructed in Blacksburg over the next decade in order

**Table 6-2**  
**Summary of Blacksburg Development Scenarios**  
**Average Annual Growth Assumptions (1999-2019)**

	1999-2004		2005-2009		2010-2014		2015-2019	
	Units	Total SF	Units	Total SF	Units	Total SF	Units	Total SF
<b>HIGH GROWTH</b>								
<b>Residential</b>								
Single Family (Low Density)	6	13,498	6	13,498	8	16,664	8	16,664
Single Family (Rural)	19	42,454	19	42,454	30	65,490	35	76,405
Multi-Family	198	233,768	198	233,768	140	165,200	112	132,160
<b>Total</b>	<b>223</b>	<b>289,720</b>	<b>223</b>	<b>289,720</b>	<b>178</b>	<b>247,354</b>	<b>155</b>	<b>225,229</b>
<b>Employment Generating</b>								
Retail/Service	1	30,000	1	20,000	1	15,000	1	15,000
Office	3	15,000	3	20,000	3	20,000	3	20,000
Industrial/R&D	2	65,000	2	75,000	2	40,000	2	40,000
Other	2	7,500	2	7,500	2	7,500	2	7,500
<b>Total</b>	<b>9</b>	<b>117,500</b>	<b>9</b>	<b>122,500</b>	<b>9</b>	<b>82,500</b>	<b>9</b>	<b>82,500</b>
<b>MEDIUM GROWTH</b>								
<b>Residential</b>								
Single Family (Low Density)	6	13,498	6	13,498	8	16,664	9	18,747
Single Family (Rural)	19	42,454	19	42,454	25	54,575	28	61,124
Multi-Family	99	116,884	99	116,884	76	89,680	65	76,700
<b>Total</b>	<b>124</b>	<b>172,836</b>	<b>124</b>	<b>172,836</b>	<b>109</b>	<b>160,919</b>	<b>102</b>	<b>156,571</b>
<b>Employment Generating</b>								
Retail/Service	1	30,000	1	20,000	1	15,000	1	15,000
Office	3	15,000	3	20,000	3	20,000	3	20,000
Industrial/R&D	2	65,000	2	75,000	2	40,000	2	40,000
Other	2	7,500	2	7,500	2	7,500	2	7,500
<b>Total</b>	<b>9</b>	<b>117,500</b>	<b>9</b>	<b>122,500</b>	<b>9</b>	<b>82,500</b>	<b>9</b>	<b>82,500</b>
<b>LOW GROWTH</b>								
<b>Residential</b>								
Single Family (Low Density)	6	13,498	6	13,498	8	16,664	8	16,664
Single Family (Rural)	19	42,454	19	42,454	25	54,575	31	67,673
Multi-Family	50	58,442	50	58,442	38	44,840	32	37,760
<b>Total</b>	<b>75</b>	<b>114,394</b>	<b>75</b>	<b>114,394</b>	<b>71</b>	<b>116,079</b>	<b>71</b>	<b>122,097</b>
<b>Employment Generating</b>								
Retail/Service	1	30,000	1	20,000	1	15,000	1	15,000
Office	3	15,000	3	20,000	3	20,000	3	20,000
Industrial/R&D	2	65,000	2	75,000	2	40,000	2	40,000
Other	2	7,500	2	7,500	2	7,500	2	7,500
<b>Total</b>	<b>9</b>	<b>117,500</b>	<b>9</b>	<b>122,500</b>	<b>9</b>	<b>82,500</b>	<b>9</b>	<b>82,500</b>

<sup>1</sup> While it is not uncommon for students to live outside of Blacksburg in areas of the county or Christiansburg, the vast majority of students (both undergraduate and graduate) desire to live within close proximity of the main campus or along the Blacksburg Transit line. The likelihood that large numbers of students will chose to live more than 5 miles from campus, especially when closer living arrangements are available in Blacksburg is considered quite low. It is assumed that perhaps as few as 4 or 5% will chose to live outside the community. The percentage of faculty members that choose to live outside the community is thought to be much higher, perhaps as much as 50%.

to meet the increased demand. At the end of 10 years, the consultants assume that Virginia Tech will have completed its expansion, household and population growth will begin to stabilize, and residential construction will fall back to roughly 85 units per year. In relation to these projections, the Town of Blacksburg issued an average of 145 new residential permits per year during the 1990s.

**Medium Growth Scenario** – The medium growth scenario assumes that roughly 50 percent of all new students over the next 10 years are housed in market rate rental or owner-occupied housing in Blacksburg. The remaining students are housed on the main campus or live outside of Blacksburg. The medium growth scenario simulates a growth rate comparable to what occurred during the 1990s.

**Low Growth Scenario** – The low growth scenario assumes that 100 percent of all new students over the next 10 years will either be housed on the main campus in new dormitory space or live outside the Town of Blacksburg, placing no additional demand for increased housing beyond the demand generated by new faculty and employees. While this is not considered a likely scenario, it does bound the extreme lower end of the growth projections.

- c.) Capital Investment Assumptions – In order to accommodate future growth, the Town of Blacksburg will have to make a number of capital investments in infrastructure and facilities. Improvements such as new road construction, the redesign of existing intersections, the development of new parks and trails, and the construction of a new fire station in the North End are just some of these investments. Table 6-3 shows that roughly \$51.9 million (in 2000 dollars) in capital improvements will be necessary to support the level of development projected in the Scenario Development Model. In addition, there are tens of millions of additional improvements that must be made over the next 20 years irrespective of the Town's growth rate.

Given the fact that many of the projects shown in Table 6-3 are transportation related, only a portion of these costs will be incurred by the Town. The Town must only contribute 2% of the total project costs, and

there is an annual cap on how much state transportation funding the Town can receive in any one year, which is based on its current population. This cap is currently set at \$2.5 million per year and will rise to \$3.1 annually once the Town's population reaches 45,000.

The Town of Blacksburg typically contributes up to 4% percent of total transportation costs as a local match. Consequently, the Town can anticipate a total capital investment of at least \$17.3 million over the next 20 years to support its growth needs. RKG Associates has assumed that these

**Table 6-3**  
**Capital Investment Required to Support Growth**  
**1999-2019**

Capital Improvement	Total Projected Capital Costs	Local Share of Costs
<b>Roadway Improvements</b>		
Hethwood II Southgate Extension West	\$ 12,000,000	\$ 480,000
Givens Land Improvements to Patrick Henry	\$ 12,000,000	\$ 480,000
<b>Intersection Improvements</b>		
South Main St. @ Ellett Road	\$ 3,000,000	\$ 120,000
Rte. 460 @ N. Main Street	\$ 3,000,000	\$ 120,000
Prices Fork @ West Campus Dr.	\$ 3,000,000	\$ 120,000
Prices Fork @ Stanger	\$ 3,000,000	\$ 120,000
<b>Public Safety</b>		
New Fire Station (North End)	\$ 1,000,000	\$ 1,000,000
<b>Parks, Recreation &amp; Greenways</b>		
Brown's Farm Recreation Center	\$ 5,000,000	\$ 5,000,000
Creation of District Park (50 acres)	\$ 400,000	\$ 400,000
Creation of (1) New Community Parks	\$ 160,000	\$ 160,000
Creation of (2) Neighborhood Parks (20 acres)	\$ 4,500,000	\$ 4,500,000
Planned Greenway Connections (Yrs. 2000-2010)	\$ 926,000	\$ 926,000
Planned Greenway Connections (Yrs. 2011-2020)	\$ 3,900,000	\$ 3,900,000
<b>TOTAL</b>	<b>\$ 51,886,000</b>	<b>\$ 17,326,000</b>

Source: Town of Blacksburg Department of Planning and Engineering, 2000.

costs will become part of the Town's annual capital improvement borrowing package, which currently runs about \$2 million per year. Depending on when these capital improvements are funded, the Town could incur between \$160,000 and \$2.2 million in new borrowing in any given year, under ideal phasing assumptions. This does not include or take into account the Town's other, non-growth related borrowing needs.

How the Town develops in the future could determine when and where the Town makes its capital investments. If development continues to move into the countryside in areas such as the North End, Northwest, and Southwest Districts, the need for new roads, upgraded intersections, and a new fire station in the North End may become essential. However, if this growth occurs primarily within the urbanized area of town and on the Virginia Tech campus, then perhaps the demand for these improvements will be delayed or reduced.

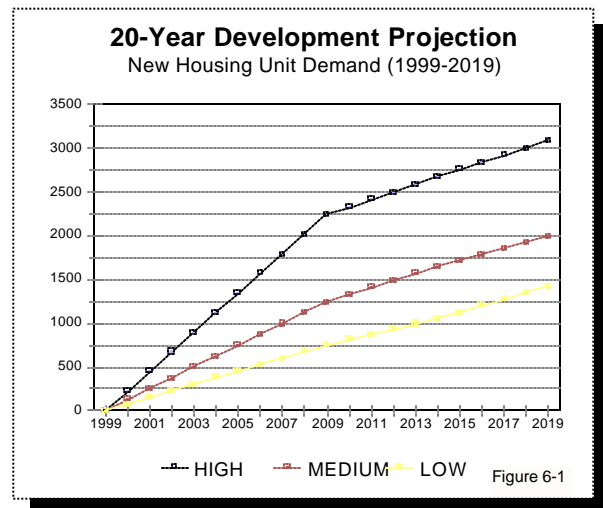
## 2. Model Results

This section details the results generated using the Development Impact Projection Model, based on the inputs previously outlined in this Chapter

- a.) Projected Development Demand – Under the three development scenarios, the demand for new housing units ranges from 1,423 units under the low growth and 1,989 units under the medium growth, to approximately 3,089 units under the high growth scenario. This represents an 11 to 25 percent increase over 1999 levels. The total assessed value of these new units (including land value), ranges from \$190 million at the low end to \$315 million under the most aggressive growth scenario.

The demand for employment generating land uses is identical for all three development alternatives. Over the next decade, RKG Associates projects that the Town will experience about an 11 percent increase in commercial and industrial development activity over the previous decade, adding approximately 1.12 million SF of new building space. Higher

development levels are expected to occur in the industrial and R&D and office markets and lower levels are expected in the retail. Between 2010 and 2019, commercial and industrial development activity is expected to slow considerably as the Town's commercial land supply is consumed, dropping to about 750,000 SF of new building space. Employment generating land uses are projected to add approximately \$100 million (in 2000 dollars) to the Town's tax rolls over the 20-year projection period.

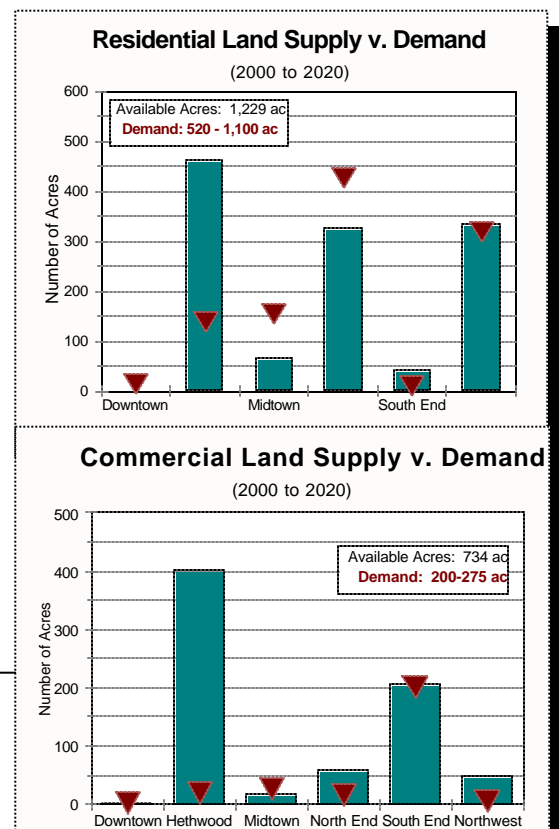


- b.) Projected Land Demand – The future demand for land is estimated by the model based on the type of land use and amount of development activity that is being projected. Each land use represented in the model has a

development density factor that relates to how much land is consumed for every new square foot of building space constructed. The density factor is based on historical development patterns. The land use that occupies the greatest amount of land on a per-square-foot-basis in Blacksburg is single-family rural housing. In this case, the land is not so much consumed by the development rather it is encumbered by the development. Many rural single-family homes are situated on several acres of farmland, woodlands, and other open space. The excess acreage that is not dedicated to the dwelling or development is typically held as open space and cannot be developed unless it is subdivided.

Land demand is also influenced by where the new development activity is projected to occur. Development located within the Midtown or Downtown Districts will occur at higher densities than other districts and thus the demand for land will be lower on average. The opposite is true in more rural districts such as Northwest and Southwest where more land is “encumbered” on a per square foot basis. Overall, the model projects that between 1,092 and 1,346 acres of land will be required to support new development in Blacksburg over the next 20 years. This represents an 18 to 22 percent increase over current development levels. Roughly 75 percent (low growth) to 80 percent (high growth) of this new land demand is expected to result from increased housing development.

While Blacksburg appears to have an abundance of land for future development, this is less true when one considers where future development demand might occur and how much developable land is available within appropriate zoning boundaries. RKG Associates assembled an inventory of undeveloped land by different zoning category within the Town’s six neighborhood districts. This was accomplished with the use of GIS



mapping software and was based the consultant's assumptions regarding the development potential of available land resources. Without reliable or complete natural constraints mapping, the consultants adopted very conservative standards for evaluating land development potential.

In total, it is estimated that approximately 1,230 acres of residential and 734 acres of commercial land remain available for future development. It should be noted that the commercial land inventory includes several new commercial nodes where new development is projected to occur in the future. However, in order to achieve this land inventory, the Town will have to rezone several areas to accommodate new commercial development. If these new areas are not rezoned as proposed then available land supplies would be much lower.

During the 1990s, approximately 417 acres and 127 acres of land were consumed for residential and commercial development respectively. Over the next 20 years, RKG Associates projects that between 520 and 1,100 acres will be needed to support new residential growth and roughly 200 to 275 acres will be needed to accommodate new on-residential growth (Figures 6-2 and 6-3). The greatest demand for residential land is projected for the North End and Northwest Districts. It is also projected that the Southwest District could experience strong demand for multi-family housing if a second access road is extended to the Hethwood II property located off of Prices Fork Road.

If this level of development occurs as projected, the Town of Blacksburg may exhaust its available residential land supply within the next 20 to 25 years. In several districts such as the Downtown, Midtown, North End, and Northwest, the demand for land could exceed the available land supply during the next twenty years unless demand slows. While there will still be land in Blacksburg available for residential development after these inventories are exhausted, they are likely to be located on the outer fringes of the community. Currently, the Town lacks a suitable supply of land zoned for multi-family uses. If Virginia Tech does increase enrollment as projected, developers will have a difficult time responding to this demand in Blacksburg and may have to go outside the community to build new



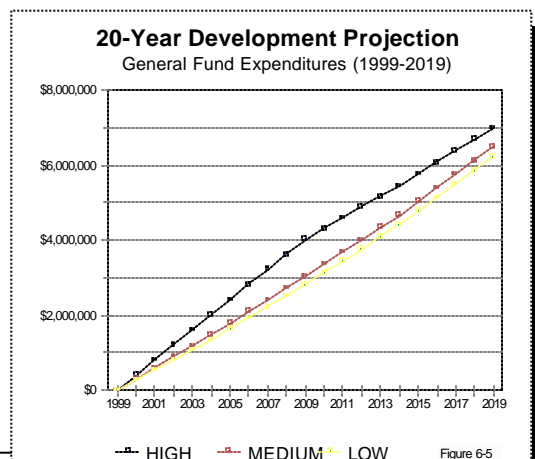
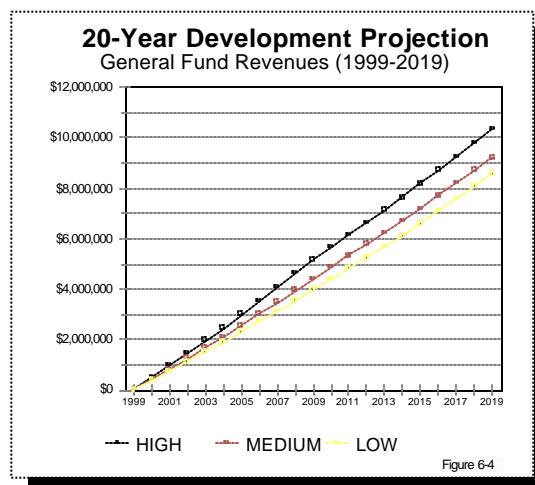
apartment complexes. If the Town does not rezone new areas for this type of housing, market forces could produce negative impacts on the community that will be discussed later in this chapter.

Relative to commercial land demand, RKG Associates projects that the Town could experience land shortages in the Downtown, Midtown, and South End Districts. If no commercial rezoning occurs in the future, it is likely that there could be additional land shortages in the Southwest and North End Districts.

c.) Operating Revenues/Less Expenditures (Before Debt Service) – Operating

revenues less expenditures is the net cash flow that results from subtracting increased municipal expenditures from increased revenues. Under some growth scenarios, it is possible for land use changes to generate increased service demands that exceed the revenues generated by the same changes. In Blacksburg, this is less likely since the largest single local

government cost item, schools/education, is not carried on the Town's budget. Blacksburg residents pay taxes to the County to cover education expenses. And while these are real costs to local taxpayers, they do not show up on the Town's balance sheet and nor do they impact its ability to provide other municipal services. As a general rule, residential development, particularly households with school-aged children, tend to generate more in way of public service costs than they generate in tax revenues. As a result, new residential development can often produce negative fiscal impacts for a community.



Over the past ten years, annual expenditures for the Town of Blacksburg have equaled roughly 75 to 80 percent of annual revenues (Figures 6-4 and 6-5). The positive cash balance is generally used to cover debt service payments on long-term borrowing commitments and some goes into a fund balance which is used at the beginning of each fiscal year to fund major equipment purchases and capital improvements.

The Scenario Builder Development Model is not designed to simulate the Town's annual financial statement, but rather it measures the revenue and expenditure relationship created by different development scenarios. The model only projects the fiscal impacts associated with new growth and does not account for existing development or revenues and expenditures levels.

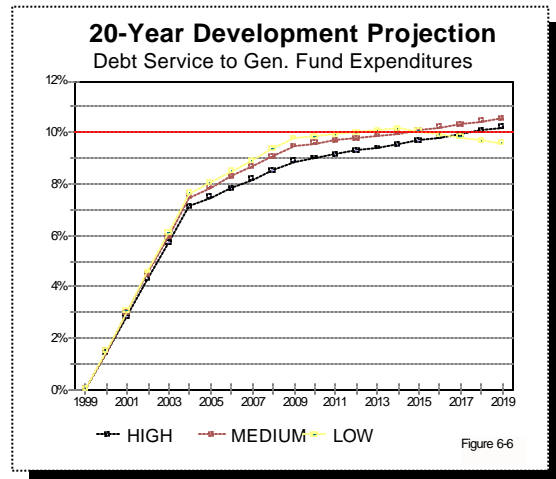
The model projects that the high growth scenario will place greater fiscal burdens on the Town during the first 10 years than either the low or medium growth scenarios. This is primarily due to the rapid development of new housing in the Town in response to increased enrollment levels at Virginia Tech. In Year 5 under the high growth scenario, annual revenues from new development exceed expenditures by a margin of only 18 percent, as compared to 29 and 28 percent under the medium and low growth scenarios respectively. Although the spread between revenues and expenditures is positive, it suggests that rapid residential growth could strain the Town's ability to provide municipal services.

- d.) Projected Debt Service and Financial Ratios – Another way to measure the impact of new development is to compare the annual cash flow balance (the difference between revenues and expenditures) against the annual debt service payments required to support new borrowing. If the revenues generated by new development are not sufficient to cover the increased annual debt service required to support that growth, then it is reasonable to conclude that the new development is creating a negative fiscal impact on the community. If allowed to continue, this situation will place financial burdens on the community and impact its ability to provide quality municipal services. Under the high growth scenario, rapid development combined with accelerated capital spending creates a situation where available revenues (before debt service) are only \$63,000 greater than annual debt service

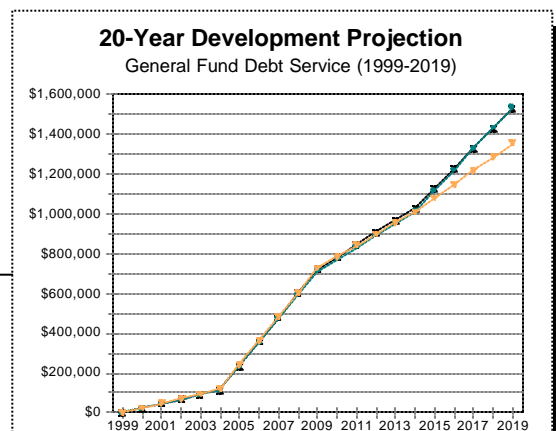
levels in Year 10. This situation improves in subsequent years as growth and capital borrowing slows.

While rapid growth can create negative fiscal impacts, so can slow growth, especially when capital investment levels are not reduced in line with lower revenues and expenditures. The Town's finance director applies certain financial ratios to monitor the town's borrowing levels in relationship to other spending, its revenue base, and its current population. The following ratios have been programmed into the model in order to monitor how projected borrowing levels compare to future revenues and expenditures. Growth scenarios that create undesirable financial ratios may eventually place a financial burden on the community.

- ❑ Debt Service to Total General Fund Expenditures – In the interest of sound fiscal planning, the Town tries to ensure that annual debt service payments do not exceed an amount equal to 15 percent of total annual expenditures. From year-to-year these levels may fluctuate or exceed this percent, especially if the Town must incur an unanticipated capital expense. However, it is the Town's goal to keep borrowing levels in line with expenditures.



According to the model, all three growth scenarios produce debt service to expenditure ratios in the 10 to 15 percent range in later years (Figure 6-6). It is important to note that in addition to the debt depicted in Figure 6-6, the Town will likely incur other debt to finance improvements that are not related to growth issues. These other improvements could push the Town too much higher debt levels



in the future. In general the three scenarios require roughly the same level of capital investment over the 20-year period, but their investment priorities and timing are slightly different.

- Net Bonded Debt to Total Assessed Value Ratio – Virginia municipalities may legally borrow up to an amount equal to 10 percent of their total assessed value, the Town of Blacksburg tries to keep its net bonded debt amount to less than 1% of its total assessed value. In 1999, the Town's total assessed value was estimated at approximately \$1.18 billion dollars and its net bonded debt balance (principal only) was in excess of \$8 million, or roughly 0.8% of total assessed value. Under the three development scenarios, this ratio remains below 1 percent. Over the 20-year projection period, annual debt service levels (current plus new debt service) are expected to rise to more than \$1.8 million per year under all three development scenarios (Figure 6-7). In comparison, the Town had debt service payment of roughly \$1 million in 1999.
  
- e.) Population Estimates – The model estimates the town's population based on the total number of housing units, the average number of persons per household, the number of people living in group quarters, and the estimated housing vacancy rate. Based on current household characteristics, the consultants estimate that the town has a total of approximately 12,591 housing units, of which, 71 percent are considered multi-family units. Although multi-family typically refers to residential structures with two or more dwelling units, the Town of Blacksburg classifies multi-family as units primarily occupied by renter households. As such, residential units such as condominiums, townhomes, duplexes, and apartment complexes are all classified as multi-family due to the predominance of renter households in these units. It is the Town's belief that renter households, primary student households, have different household size characteristics than single-family dwellings and thus must be counted separately. The composite household size in Blacksburg for all dwelling units is estimated at 2.42 persons per household, with single-family units averaging 2.85 persons and multi-family averaging 2.32 persons per household.

Since all three development scenarios are based on the assumption that nearly all future population growth in Blacksburg will be driven by increased student enrollments and faculty/administrative hiring, the population projections vary according to how many of those individuals chose to live in Blacksburg. Whether new students are housed in dormitories or off-campus, in-town housing, they are counted in Blacksburg's population figures. Faculty and administrative staff typically have different occupancy characteristics than students. As a general rule, a much larger percentage of the faculty and administrative staff live outside the Town of Blacksburg. The Model assumes that as many as 50% of this population may chose to live outside of town, although the University does not maintain any reliable records regarding the place of residence of faculty and administrative staff.

Under high growth assumptions, the Town's population is projected to rise from its current level of 39,633 to roughly 42,300 in five years, 44,900 in ten years, 46,000 in 15 years, and 47,100 in 20 years. This is considered a conservative projection, and it is possible that the Town's population could approach 49,000 or 50,000 within 20 years under a slightly more aggressive growth scenario.

## **F. POLICY IMPLICATIONS OF MODEL FORECASTS**

### **1. Land Use Implications**

- ❑ Blacksburg has a limited supply of commercial & industrially-zoned land and building space to support new development.
- ❑ Virginia Tech controls the development future of several key parcels and buildings that are critical to Blacksburg's economic future.
- ❑ Land for multi-family housing is in short supply. Increased demand could put greater pressure on existing single-family neighborhoods to transition

- into rental housing and developers maybe pushed out to Blacksburg's fringes and over the border in the county.
- ❑ Projected growth at Virginia Tech over the next decade could outpace the town's ability to support new residential development and place financial burdens on the community.
  - ❑ Blacksburg's stricter development standards add value to development but have created a disincentive for some local developers who have chosen to do business outside the community.

## **2. Market Implications**

- ❑ Virginia Tech's projected growth could accelerate the demand for rental housing, office, and R&D space over the next decade.
- ❑ Blacksburg's housing market is not creating housing in the more affordable \$125,000 to \$175,000 range. This is making the Town more exclusive and could impact its ability to attract new employers.
- ❑ Without a supply of commercial land and building space, the town will not be able to capitalize on its full economic development potential.
- ❑ Blacksburg and Virginia Tech officials must continue to coordinate on growth related matters. Rapid expansion of the University could adversely impact the Town's fiscal position and quality of life.
- ❑ The Town is not currently positioned to accommodate projected demand for multi-family housing over the next decade. The Hethwood II site is the primary area for this type of housing but it is landlocked from development due to limited site access.
- ❑ Enrollment growth at Virginia Tech must be accompanied by some level of on-campus housing.
- ❑ Future growth patterns will likely necessitate the creation of new commercial zones in the North End and Southwest in order to serve growing populations in these areas.
- ❑ Residential growth at the Town's borders will continue to occur, especially if it is not accommodated in town.
- ❑ The Town has roughly a 20- to 25-year supply of land for new residential development.

## **3. Municipal Finance Implications**

- ❑ The Town's revenues and expenditures are less dependent on real property tax base growth and more sensitive to changes in population and household formations.
- ❑ New residential development contributes positively to Blacksburg's tax base because the cost of education is a county budget item.
- ❑ The decline of Blacksburg retail base has eroded BPOL revenues. However, these losses have been offset by increased taxes from professional service firms and from the 1998 boundary line adjustment in the South End.
- ❑ High value land uses such as office and retail possess lower service demand needs than residential and generate real property, consumer utility, BPOL, and sales and use tax revenues

#### **4. Capital Investment Implications**

- ❑ Approximately \$17 million in locally financed capital investment will be needed to support Blacksburg's growth over the next 20 years. An additional \$34 million in state funded roadway improvements will be needed during this period.
- ❑ Rapid housing growth in the North End, Northwest, and Southwest Districts could accelerate the need for several costly roadway improvements.
- ❑ Rapid on-campus housing growth and expansion could shift the Town's capital investment priorities to several key intersections near the Virginia Tech campus.
- ❑ The demand and need for parks, open space, and greenways ways will increase over the next decade
- ❑ The need for roadway improvements could outpace state and town funding caps.

#### **5. Quality of Life Implications**

- ❑ A high growth scenario could compromise some of Blacksburg's valuable open space, agricultural, and scenic features.
- ❑ Failure to accommodate future multi-family housing needs could exacerbate existing neighborhood tensions, result in increased single-family

- conversions, and encourage development at Blacksburg's borders in the county
- ❑ The continued decline of Blacksburg's retail base will require local residents to travel out of town for more goods and services.
  - ❑ Growth over the next 20 years will likely increase traffic volumes on North Main, South Main, Tom's Creek, and Prices Ford Road